15/05/2002 10/023,163

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 15may02 15:11:02 User267149 Session D85.4
SYSTEM:OS  - DIALOG OneSearch
  File 350:Derwent WPIX  1963-2001/UD,UM &UP=200230
        (c) 2002  Thomson Derwent
*File 350: Please see HELP NEWS 350 for details about U.S. provisional
applications. Also more updates in 2002.
  File 347:JAPIO  Oct/1976-2001/Dec(Updated 020503)
        (c) 2002 JPO & JAPIO
*File 347: JAPIO data problems with year 2000 records are now fixed.
Alerts have been run.  See HELP NEWS 347 for details.
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S11	14	PN=US 4876479 + PN=US 4876510 + PN=US 4878023 + PN=US 4885-540 + PN=US 4910462 + PN=US 4920011 + PN=US 4926125 + PN=US 4-935714 + PN=US 4954781 + PN=US 4965521 + PN=US 4978920 + PN=US 5036282 + PN=US 5055789 + PN=US 5061891
S12	13	PN=US 5084676 + PN=US 5132621 + PN=US 5166619 + PN=US 5185-577 + PN=US 5198769 + PN=US 5225782 + PN=US 5235283 + PN=US 5-243277 + PN=US 5414360 + PN=US 5483163 + PN=US 5554929 + PN=US 5623208 + PN=US 5642087 + PN=US 5717371
S13	6	PN=US 5748063 + PN=US 5886548 + PN=US 5886596 + PN=WO 2000-25146 + PN=WO 9420862 + PN=WO 9613045 + PN=ZA 8804121
S14	73	S1:S13
S15	44	S14 AND (MRI OR MAGNETIC()RESONAN???? OR MRA OR NMR OR MAG-

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            NETORESONANCE OR PMR OR PROTON()MAGNETIC()RESONAN???? OR MR()-
            IMAG???)
S16          6   S15 AND EDDY(3N)CURRENT? ?
S17          0   S16 AND CONDUCT?(3N)ELEMENT? ?
S18          0   S16 AND SUPRESS?
S19          2   S16 AND INDUC????
S20         21   S15 AND GRADIENT? ?(3N)COIL? ?
S21          0   S20 AND (INDUC???(3N)EDDY(3N)CURRENT)
S22          2   S20 AND EDDY(3N)CURRENT
S23          2   S22 NOT S19
? S S20 AND INDUC???
            21  S20
        145518  INDUC???
     S25     2  S20 AND INDUC???
? S S25 NOT S23
             2  S25
             2  S23
     S26     2  S25 NOT S23
? S S20 AND (GRADIENT? ?(3N)MAGNETIC(3N)FIELD? ?)
            21  S20
         47697  GRADIENT? ?
        672579  MAGNETIC
        473989  FIELD? ?
          3392  GRADIENT? ?(3N)MAGNETIC(3N)FIELD? ?
     S27    11  S20 AND (GRADIENT? ?(3N)MAGNETIC(3N)FIELD? ?)
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        717921  EFFECT? ?
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            11  S27
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          966675  CONDUCT?????
         1601079  ELEMENT? ?
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               1  S32
               1  S31
     S33       1  S32 NOT S31
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19/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012447034
WPI Acc No: 1999-253142/**199921**
Related WPI Acc No: 1996-433139
XRPX Acc No: N99-188349
Electromagnetic shield structure for **NMR** radio frequency coil used in spectroscopy
Patent Assignee: UAB RES FOUND (UABR-N)
Inventor: VAUGHAN J T
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5886596	A	19990323	US 93103940	A	19930806	199921 B
			US 95526135	A	19950905	
			US 96710365	A	19960916	

Priority Applications (No Type Date): US 96710365 A 19960916; US 93103940 A 19930806; US 95526135 A 19950905
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5886596	A		17	H01P-007/00	Cont of application US 93103940 CIP of application US 95526135 CIP of patent US 5557247

Abstract (Basic): **US 5886596** A
Abstract (Basic):
NOVELTY - The conductive layer (23) surrounding the coil, efficiently conducts RF current at selected Larmor frequency thereby conducting and containing the RF coils at the selected Larmor frequency with the coil. The conductive layer, also simultaneously attenuates low frequency **eddy current** propagation of the type **induced** by switching field gradient current in **NMR** application.
DETAILED DESCRIPTION - An electrically conductive layer (23) comprises a metallic foil, deposited metallic layer and a plated metal layer. The conductive layer has thickness substantially equal to one skin depth at selected Larmor frequency.
USE - For **NMR** RF coil used in klystrons, microwave triodes utilized for spectroscopy and human imaging such as diagnosis of metabolic disorders such as encephalopathy, cerebral activation mapping and various other clinical applications.
ADVANTAGE - By approximately varying the depths of insertion of the center conductors and by tuning frequency of each group of TEM resonators to some desired frequency, the fixing of the element's distributed impedances is performed. The shield is usable in various clinical applications as the coil using this EM shield exhibits good S/N ratio, spatial resolution, temporal resolution, chemical shift resolution and magnetic susceptibility.
DESCRIPTION OF DRAWING(S) - The figure shows elevated perspective view of tuned TEM resonator for a RF, large volume MR coil.

19/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007471330
WPI Acc No: 1988-105264/**198815**
XRPX Acc No: N88-079809
NMR imaging using active shield to isolate main magnet - using 3 orthogonal gradient coils with 3 shield components driven by currents opposite to gradient coils
Patent Assignee: MASSACHUSETTS INST TECHNOLOGY (MASI)
Inventor: PILLSBURY R D; PUNCHARD F B
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4733189	A	19880322	US 86870031	A	19860603	198815	B

Priority Applications (No Type Date): US 86870031 A 19860603
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4733189	A		11		

Abstract (Basic): US 4733189 A

The **MRI** system has an active shield with pulsed secondary coils isolating the main magnet. Three pulsed gradient coils (defining the X, Y, and Z axes) are isolated from the cryostat and main magnet by a secondary set of three corresponding shield components that are driven by currents opposite to the gradient coils. The distribution of the shield windings and the magnitude of the currents in them are adjusted to produce a magnetic field outside the shield equal to but opposite in sign from the field produced by the pulsed gradient coils.

Therefore the fields are cancelled outside the pair. The placement of the gradient and shield windings is made so as to reduce or zero unwanted pulsed gradient coil field harmonics. For the case of the solenoidal Z pulsed gradient coil set and saddle-shaped X and Y pulsed gradient coil sets. Specified active shield configurations are used.

USE/ADVANTAGE - By eliminating **induced eddy currents**, resolution of images is improved and imaging time is reduced. Suited to superconducting systems.

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23/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013193286
WPI Acc No: 2000-365159/**200031**
XRPX Acc No: N00-273294
Magnetic resonance imaging apparatus for medical purposes, comprises gradient system comprising **eddy current** shield formed by electrically conductive, substantially closed plate
Patent Assignee: KONINK PHILIPS ELECTRONICS NV (PHIG); US PHILIPS CORP (PHIG)
Inventor: HAM C L G; MATEBOER A J; MULDER G B J; ROOZEN N B; VERBUNT J P M
Number of Countries: 021 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6326788	B1	20011204	US 99428765	A	19991028	200203

Priority Applications (No Type Date): EP 98203650 A 19981028
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6326788	B1			G01V-003/00	

Abstract (Basic): **WO 200025146** A1
Abstract (Basic):
NOVELTY - The gradient system (40) comprises an **eddy current** shield (48) which is formed by an electrically conductive, substantially closed plate. A primary **gradient coil** (60) and a shielding coil (56) are arranged within the shield and they constitute a mechanically rigid unit.
DETAILED DESCRIPTION - The gradient system (40) is arranged in the evaluated space (38). The **eddy current** shield (48) is made of aluminum or copper. The time constant for eddy currents of the **eddy current** shield is greater than the pulse duration of the gradient current pulses driving the gradient system.
USE - For medical purposes for forming images of cross sections of the body.
ADVANTAGE - As the electrically conductive **eddy current** shield is formed from a substantially closed plate in which two coils are arranged, the escape of magnetic flux to the environment is prevented, avoiding heat dissipation and production of noise in the main field magnet.
DESCRIPTION OF DRAWING(S) - The figure shows the construction of the **gradient coil** system.
Space (38)
Gradient system (40)
Eddy current shield (48)
Shielding coil (56)
Primary **gradient coil** (60

23/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009533225
WPI Acc No: 1993-226766/**199328**
XRPX Acc No: N93-174081
Superconducting **eddy-current** free **MRI** magnet - has enclosure for shell, shield, magnet cartridge, support, **gradient coil** and RF shield
Patent Assignee: GENERAL ELECTRIC CO (GENE)
Inventor: DORRI B; LASKARIS E T; ROEMER P B; VERMILYEA M E
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5225782	A	19930706	US 91759389	A	19910913	199328	B

Priority Applications (No Type Date): US 91759389 A 19910913
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5225782	A		7	G01V-003/00	

Abstract (Basic): US 5225782 A

A first shield is located at a predetermined distance away from a shell. A magnet cartridge has a coil form and superconducting coils wound on the coil form and located adjacent to the first shield. At least one **gradient coil** is located at a predetermined distance away from the first shield. An RF shield is rigidly attached to the **gradient coil** and an RF coil is located at a predetermined distance away from the RF shield. An enclosure encloses the first shell, first shield, magnet cartridge, a support, the **gradient coil** and the RF shield.

The first shield is a thermal shield having inner and outer fibre glass shells connected by fibre glass end plates and including segmented, electrically insulated strips of copper, aluminium or other materials with high thermal conductivity. The support includes axial straps and radial thin wall tubes which support the magnet cartridge and thermal shield, respectively.

ADVANTAGE - Size, weight and cost are reduced.

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26/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008606739
WPI Acc No: 1991-110769/**199116**
XRPX Acc No: N91-085436
Tesseral **gradient coil** for nuclear spin tomography device - has arrangement of segmented windings for reduced parasitic fields and **induced** stray currents
Patent Assignee: SIEMENS AG (SIEI)
Inventor: FRESE G; STETTER E
Number of Countries: 003 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5198769	A	19930330	US 90586875	A	19900924	199315

Priority Applications (No Type Date): EP 89118095 A 19890929
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5198769	A		9	G01R-033/20	

Abstract (Basic): DE 4029477 A
A tesseral **gradient coil** for a nuclear spin tomography device has a hollow cylindrical internal vol. with cylinder axis in the Z direction of a cartesian coordinate system. The hollow vol. contains **gradient coils** for generating magnetic field gradients whereby each winding of each tesseral **gradient coil** contains two segments (5a-7b) lying in the azimuthal direction connected by conductors.

One segment of each winding lies on a minimum possible radius (r1) and the other on a maximum possible radius (r2) wrt. the cylinder axis.

ADVANTAGE - Parasitic fields and stray currents **induced** in the object are reduced.
Dwg.4/11

Abstract (Equivalent): US 5198769 A
A nuclear **magnetic resonance** tomography appts. has a fundamental field magnet system having a hollow-cylindrical interior with a cylinder axis disposed in the z-direction of a Cartesian x-y-z coordinate system. A tesseral **gradient coil** includes two segments (e.g. (5a,5b) or (7a,7b), proceeding in the azimuthal direction connected by conductors, with a first (5b or 7b) segments disposed on an optimally small radius.

The second azimuthally proceeding segment is disposed on an optimally large radius and the cylinder axis and the segments are disposed in respective planes substantially perpendicular to the cylinder axis.

ADVANTAGE - Parasitic magnetic fields are reduced with associated decrease in **gradient coil induced** currents in examination subject. Shorter switching times with lower outlay. Homogeneity optimised w.r.t. turns spacing.

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26/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007471330
WPI Acc No: 1988-105264/**198815**
XRPX Acc No: N88-079809
NMR imaging using active shield to isolate main magnet - using 3 orthogonal **gradient coils** with 3 shield components driven by currents opposite to **gradient coils**
Patent Assignee: MASSACHUSETTS INST TECHNOLOGY (MASI)
Inventor: PILLSBURY R D; PUNCHARD F B
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4733189	A	19880322	US 86870031	A	19860603	198815	B

Priority Applications (No Type Date): US 86870031 A 19860603
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4733189	A		11		

Abstract (Basic): US 4733189 A

The **MRI** system has an active shield with pulsed secondary coils isolating the main magnet. Three pulsed **gradient coils** (defining the X, Y, and Z axes) are isolated from the cryostat and main magnet by a secondary set of three corresponding shield components that are driven by currents opposite to the **gradient coils**. The distribution of the shield windings and the magnitude of the currents in them are adjusted to produce a magnetic field outside the shield equal to but opposite in sign from the field produced by the pulsed **gradient coils**.

Therefore the fields are cancelled outside the pair. The placement of the gradient and shield windings is made so as to reduce or zero unwanted pulsed **gradient coil** field harmonics. For the case of the solenoidal Z pulsed **gradient coil** set and saddle-shaped X and Y pulsed **gradient coil** sets. Specified active shield configurations are used.

USE/ADVANTAGE - By eliminating **induced** eddy currents, resolution of images is improved and imaging time is reduced. Suited to superconducting systems.

31/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009805104
WPI Acc No: 1994-084959/**199411**
XRPX Acc No: N94-066512
Gradient coil for therapy tomograph using nuclear **magnetic resonance** - has superconducting main coil and sub-coils with azimuthal segments spaced apart, connected together and located on rotationally symmetrical or ellipsoidal surface
Patent Assignee: BRUKER ANALYTISCHE MESSTECHNIK (BRUK-N); BRUKER ANALYTISCHE MESSTECHNIK GMBH (BRUK-N); BRUKER ANALYTIK GMBH (BRUK-N)
Inventor: LAUKIEN G; WESTPHAL M
Number of Countries: 005 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5414360	A	19950509	US 93118005	A	19930908	199524

Priority Applications (No Type Date): DE 4230145 A 19920909
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5414360	A		20	G01V-003/00	

Abstract (Basic): EP 586983 A

Each sub-coil (20) has several windings, and the two azimuthal segments (21, 22) have an axial distance between them in the direction of the z-axis. The radial outer segment (22) is arranged with the radial distance (r2) from the z axis and is nearer to the coordinate origin in relation to the z axis than the radial inner segment (21) with the radial distance (r1) from the z-axis.

Both segments (21, 22) are joined to one another by conductor sections (23) and are located in common on a rotation-symmetrical or elliptical surface. The main field magnet formed by the main field coil has a room temp. hole with a dia. ,dB, and a gap, g, in an axial direction around the coordinate origin, where dB lies between 1.6 g and 2.1 g.

USE/ADVANTAGE - For micro-surgical applications. X and Y gradients can be produced simultaneously.

Dwg.9b/14

Abstract (Equivalent): EP 586983 B

Nuclear spin resonance (**NMR**) measuring device, in particular **NMR** tomography apparatus with a preferentially superconducting main field coil which, in a measuring volume whose centre coincides with a coordinate origin of a Cartesian x,y,z coordinate system, can produce a **homogeneous static** magnetic field B0 in the direction of the z-axis of the coordinate system, and with a tesseral **gradient coil** system for the production of **magnetic gradient fields** with largely linear dependence, in a direction perpendicular to the z-axis, within the measuring volume, whereby the **gradient coil** system consists of at least four largely equal, saddle-like partial coils which are arranged symmetrically with radial and axial separations from the coordinate

origin, the partial coils each exhibiting two electrically conducting segments which run in the azimuthal direction about the z-axis, one segment of which has a small radial separation r1 and the other segment as large a radial separation r2 as possible from the z-axis, the two azimuthal segments exhibiting an axial separation from each other in the direction of the z-axis, being connected to each other via conducting sections (23) and being located on a common rotationally symmetric or ellipsoidal surface r(z), wherein each partial coil (20) comprises several windings, characterised in that the radially outer segment (22) with the radial separation r2 from the z-axis is, with respect to the z-axis, axially closer to the coordinate origin than the radially inner segment (21) with the radial separation r1 from the z-axis and that the main field magnet, which is formed largely by the main field coil (10), exhibits a room temperature bore with a diameter dB as well as a gap g in the axial direction about the coordinate

33/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004377588
WPI Acc No: 1985-204466/**198534**
XRPX Acc No: N85-153402
Decoupling shield for **NMR** imaging appts. - has capacitive combination of conductive arrays on dielectric sheet for decoupling RF and **gradient coils** of **NMR** appts.
Patent Assignee: GENERAL ELECTRIC CO (GENE)
Inventor: EASH M G; HAYES C E
Number of Countries: 009 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 4642569	A	19870210	US 83562121	A	19831216	198708

Priority Applications (No Type Date): US 83562121 A 19831216
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 151726	A	E	17		

Designated States (Regional): CH DE FR GB IT LI NL SE

Abstract (Basic): EP 151726 A

A superconducting solenoid with a cylindrical bore (12) has a set of main windings (16) within a cryostat (18) producing a polarising field, homogenised by sets of corrective shim coils (20). The RF coil assembly (22) is positioned axially inside the **gradient coil** assembly (24) with an RF shield (26) interposed.

This shield comprises two sheets (32,34) of e.g. Cu sepd. by a flexible dielectric layer (36) such as a Teflon printed circuit board. The sheets are divided into arrays of rectangular conductive areas (38) sepd. by orthogonal gaps (40,42) with a half-width offset between upper and lower arrays. The capacitive elements acts as short-circuits at radio frequencies but transmit homogeneous and audio **magnetic fields** associated with pulsed **field gradients**.

USE - In a whole-body **NMR** imaging superconducting magnet.

1,2/7

Abstract (Equivalent): EP 151726 B

An **NMR** apparatus including means for producing a homogeneous magnetic field, a radio frequency (RF) coil having a plurality of elements for transmitting and receiving RF energy, a **gradient coil** for generating pulsed linear **magnetic field gradients** at audio frequencies and a decoupling shield disposed between said RF and **gradient coils**, said RF **coil** being disposed within the shield, said shield including an isolating member with an electrically **conductive** surface and capacitive **elements** to block high frequencies and to transmit low frequencies, characterised in that the shield comprises a first array made up of a multiplicity of electrically conductive regions separated by a first set of relatively narrow, compared to the width of said conductive regions, non-conductive regions, said array being disposed on the inner shield surface; a second array made up of a multiplicity

of electrically conductive regions separated by a second set of relatively narrow, compared to the width of said conductive regions, non-conductive regions said first and second arrays being disposed on opposite surfaces of a member formed of a high dielectric material, the conductive regions of one array being offset relative to the conductive regions of the other array such that the conductive regions of the one array bridge the non-conductive regions of the other array to form a plurality of capacitive elements which act essentially as electrical short-circuits at radio frequencies and which transmit substantially unaffected the homogeneous magnetic field and the audio frequencies associated with the pulsed **magnetic field gradien**

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15may02 12:10:58 User267149 Session D84.2

SYSTEM:OS - DIALOG OneSearch
File 350:Derwent WPIX 1963-2001/UD,UM &UP=200230
(c) 2002 Thomson Derwent
*File 350: Please see HELP NEWS 350 for details about U.S. provisional applications. Also more updates in 2002.
File 347:JAPIO Oct/1976-2001/Dec(Updated 020503)
(c) 2002 JPO & JAPIO
*File 347: JAPIO data problems with year 2000 records are now fixed. Alerts have been run. See HELP NEWS 347 for details.

Set	Items	Description
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S3	16	PN=JP 62194842 + PN=JP 7299048 + PN=JP 8229023 + PN=JP 826-6513 + PN=JP 9182733 + PN=KR 9000844 + PN=NL 1001573 + PN=US 4733189 + PN=US 4737716 + PN=US 4881035 + PN=US 4924186 + PN=US 5132618 + PN=US 5243286 + PN=US 5296810
S4	10	PN=US 5331281 + PN=US 5406204 + PN=US 5414360 + PN=US 5481-191 + PN=US 5572131 + PN=US 5583439 + PN=US 5592089 + PN=US 5-661399 + PN=US 5736858 + PN=US 5900794 + PN=WO 9119209 + PN=WO 9119994
S5	26	S1:S4
S6	22	S5 AND (MRI OR MAGNETIC()RESONAN???? OR MRA OR NMR OR MAGNETORESONANCE OR PMR OR PROTON()MAGNETIC()RESONAN???? OR MR()IMAG???)
S7	15	S6 AND GRADIENT? ?(3N)COIL? ?
S8	0	S7 AND (SELF()INDUC???(3N)EDDY(3N)CURRENT)
S9	7	S7 AND (EDDY(3N)CURRENT? ?)

?

9/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010727073
WPI Acc No: 1996-224028/**199623**
XRPX Acc No: N96-188023
Modular **MRI gradient coils** for conventional imaging or for ultra-fast imaging - has **gradient coils** which are longitudinally symmetrical about X and Y axis respectively, which separate them, with secondary coils wound cylindrical former concentric but external to primary coils
Patent Assignee: ELSCINT LTD (ELSC)
Inventor: HARVEY P R; KATZNELSON E
Number of Countries: 005 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5736858	A	19980407	US 94335340	A	19941103	199821

Priority Applications (No Type Date): US 94335340 A 19941103; US 96738579 A 19961029
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5736858	A		12	G01V-003/00	Cont of application US 94335340

Abstract (Basic): GB 2295020 A

The **gradient coils** include a magnet for supplying large homogeneous static magnetic field to align spins in a subject within the interior space of magnet, radio frequency transmitter for generating RF signals at Larmor frequencies, RF coil for transmitting RF signals to tip the aligned spins to have at least a projection on a plane normal to static magnetic field, and at least one modular **gradient coil** set for varying static magnetic field to enable encoding free induction decay (FID) signal emitted by the tipped spins.

The modular **gradient coil** set includes modular **gradient coils**, the first of which is constructed and arranged to provide first region within the magnetic field having linear gradients for ultra-fast **MRI**, and second modular **gradient coil** arranged to provide a second region within the static magnetic field having linear gradients for conventional **MRI**. The second modular **gradient coil** is constructed and arranged to operate in conjunction with the first to obtain the second region larger than the first.

ADVANTAGE - Exhibits reduced generation of **eddy currents** within **MRI** magnetic system, and modular design provides **gradient coil** of high efficiency and tailored volume.

9/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009805438
WPI Acc No: 1994-085293/**199411**
Related WPI Acc No: 1991-001490; 1992-318433; 1992-425840; 1993-305096; 1993-305097; 1994-027934; 1994-027936; 1994-034445; 1994-287335; 1994-302352; 1994-366232; 1995-024371; 1995-024372; 1996-019257; 2001-113942
XRPX Acc No: N94-066776

Gradient field **coil** assembly for **magnetic resonance** imaging system - uses self-shielded **coil** assembly to generate **gradients** across examination region and shield components such that **eddy currents** are not induced

Patent Assignee: PICKER INT INC (PXRM)
Inventor: MORICH M A

Number of Countries: 005 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5296810	A	19940322	US 92859152	A	19920327	199411
			US 92859154	A	19920327	
			US 92942521	A	19920909	
			EP 93307088	A	19930908	

Priority Applications (No Type Date): US 92942521 A 19920909; US 92859152 A 19920327; US 92859154 A 19920327
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5296810	A		16	G01R-033/20	CIP of application US 92859152 CIP of application US 92859154

Abstract (Basic): EP 587423 A

The appts. includes a vacuum vessel (40) having a central helium reservoir (48) in which superconducting magnetic coil windings (44) are maintained at a superconducting temp. An internal bore (42) receives a self-shielded **gradient coil** assembly (14) and an RF coil (22).

In operation, the field coil assembly generates a uniform magnetic field longitudinally through an examination region (12), and the self-shielded field coil assembly (13) selectively creates gradient magnetic fields across the region. A gradient controller (16) controls a current pulse generator (18) to apply selected characteristics for the desired magnetic field pulses.

ADVANTAGE - Provides energy efficient assembly with shorter coils for improved linearity and improved thermal cooling.

Dwg.1/7

Abstract (Equivalent): US 5296810 A

The superconducting magnetic imaging apparatus includes a vacuum vessel having a central helium reservoir in which superconducting magnetic coil windings are maintained at a superconducting temperature. The vacuum vessel defines an internal bore within which a self-shielded **gradient coil** assembly (14) and an RF coil are received.

The self-shielded coil assembly includes an inner former (60) which defines an imaging region within which an imaged portion of the patient are received. X and y-**gradient coils** having winding patterns (62) are bonded to the former (60) forming an integral structure. A z-**gradient coil** (70) is mounted to mechanical reinforcement structure (72) to be held in a spaced relationship from the x and y-**gradient coils** with an air gap (74) in between which facilitates dissipation of heat generated by the large current pulses applied to the x and y-**gradient coils**.

An outer former (80) of larger diameter than the z-**gradient coils** is received in the bore and supports the inner former therein. X, y and z-**gradient** secondary or shielding **coils** (82, 84) are bonded to the outer former preventing the gradients generated by the primary **gradient coils** from inducing **gradient eddy currents** in the vacuum vessel and the structures contained therein.

USE/ADVANTAGE - **MRI** appts. applicable in conjunction with MR. spectroscopy systems, provides a self-shielded **gradient coil**. Exhibits improves thermal cooling and shielding characteristics.

9/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008897294
WPI Acc No: 1992-024563/**199203**
Related WPI Acc No: 1992-007635
XRPX Acc No: N92-018713
Shielded **gradient coil** for **NMR** imaging - uses cylindrical layers with longitudinal and circumferential conducting strips with transition region between strips
Patent Assignee: ADVANCED NMR SYSTEMS INC (ADNM-N); ADV NMR SYST INC (ADNM-N)
Inventor: MARTIN C; RZEDZIAN R
Number of Countries: 016 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5481191	A	19960102	US 90545888	A	19900629	199607
			US 92921411	A	19920723	
			US 93133733	A	19931017	
US 5572131	A	19961105	US 90534142	A	19900606	199650
			US 90545888	A	19900629	
			US 92921411	A	19920723	
			US 93133733	A	19931007	
			US 94242706	A	19940513	
			US 95452540	A	19950530	

Priority Applications (No Type Date): US 90545888 A 19900629; US 90534142 A 19900606; US 90534156 A 19900606; US 90546503 A 19900629; US 92921411 A 19920723; US 93133733 A 19931017; US 94242706 A 19940513; US 95452540 A 19950530
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5481191	A		9	G01V-003/00	Cont of application US 90545888
					Cont of application US 92921411
					Cont of application US 93133733
US 5572131	A		10	G01V-003/00	CIP of application US 90534142
					Cont of application US 90545888
					Cont of application US 92921411
					Cont of application US 93133733
					Div ex application US 94242706

Abstract (Basic): WO 9119994 A
The shield for an RF coil in a nuclear **magnetic resonance** system has cylindrically shaped inner and outer layers. Conductive strips extend longitudinally along the longitudinally axis of the cylinder in one of the two regions, with circumferentially strips in the other region. A transition region is located at the boundary of the longitudinal and the circumferential strips where current changes from a longitudinal direction to a circumferential direction or vice versa.
A third layer has a conductive layer overlapping part of the

transition region. Insulating layers separate the inner, outer and third layers.

ADVANTAGE - Reduces **gradient coil** power loss attributable to shield by reducing **eddy current** losses.

Dwg.2/5

Abstract (Equivalent): US 5572131 A

A **gradient coil** assembly for **use in magnetic resonance** imaging, said **coil assembly** comprising

a primary coil assembly including a primary coil placed about a first generally cylindrical outer surface of a first substrate, said primary coil generating a first magneto-motive force and a spatially varying magnetic field in a region radially inside said first surface when driven with a first pulsed current signal,

9/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008897294
WPI Acc No: 1992-024563/**199203**
Related WPI Acc No: 1992-007635
XRPX Acc No: N92-018713
Shielded **gradient coil** for **NMR** imaging - uses cylindrical layers with longitudinal and circumferential conducting strips with transition region between strips
Patent Assignee: ADVANCED NMR SYSTEMS INC (ADNM-N); ADV NMR SYST INC (ADNM-N)
Inventor: MARTIN C; RZEDZIAN R
Number of Countries: 016 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5481191	A	19960102	US 90545888	A	19900629	199607
			US 92921411	A	19920723	
			US 93133733	A	19931017	
US 5572131	A	19961105	US 90534142	A	19900606	199650
			US 90545888	A	19900629	
			US 92921411	A	19920723	
			US 93133733	A	19931007	
			US 94242706	A	19940513	
			US 95452540	A	19950530	

Priority Applications (No Type Date): US 90545888 A 19900629; US 90534142 A 19900606; US 90534156 A 19900606; US 90546503 A 19900629; US 92921411 A 19920723; US 93133733 A 19931017; US 94242706 A 19940513; US 95452540 A 19950530
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5481191	A		9	G01V-003/00	Cont of application US 90545888
					Cont of application US 92921411
					Cont of application US 93133733
US 5572131	A		10	G01V-003/00	CIP of application US 90534142
					Cont of application US 90545888
					Cont of application US 92921411
					Cont of application US 93133733
					Div ex application US 94242706

Abstract (Basic): WO 9119994 A
The shield for an RF coil in a nuclear **magnetic resonance** system has cylindrically shaped inner and outer layers. Conductive strips extend longitudinally along the longitudinally axis of the cylinder in one of the two regions, with circumferentially strips in the other region. A transition region is located at the boundary of the longitudinal and the circumferential strips where current changes from a longitudinal direction to a circumferential direction or vice versa.
A third layer has a conductive layer overlapping part of the

transition region. Insulating layers separate the inner, outer and third layers.

ADVANTAGE - Reduces **gradient coil** power loss attributable to shield by reducing **eddy current** losses.

Dwg.2/5

Abstract (Equivalent): US 5572131 A

A **gradient coil** assembly for **use in magnetic resonance** imaging, said **coil assembly** comprising

a primary coil assembly including a primary coil placed about a first generally cylindrical outer surface of a first substrate, said primary coil generating a first magneto-motive force and a spatially varying magnetic field in a region radially inside said first surface when driven with a first pulsed current signal,

9/3,AB/4 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

008880364

WPI Acc No: 1992-007635/**199201**

Related WPI Acc No: 1992-024563

XRPX Acc No: N92-005830

Nuclear **magnetic resonance** imaging **gradient coil** assembly - uses cylindrical component with two concentrically aligned surfaces that locate primary and shielding coils

Patent Assignee: ADVANCED NMR SYSTEMS INC (ADNM-N); ADV NMR SYST INC (ADNM-N)

Inventor: MARTIN C; RZEDZIAN R

Number of Countries: 016 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5243286	A	19930907	US 90534156	A	19900606	199337
			US 90546503	A	19900629	

Priority Applications (No Type Date): US 90546503 A 19900629; US 90534156 A 19900606; US 90534142 A 19900606; US 90545888 A 19900629

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9119209	A				
US 5243286	A		7	G01V-003/00	CIP of application US 90534156

Abstract (Basic): WO 9119209 A

The assembly includes a cylindrical unitary member. A primary coil is located around the cylindrical surface. The surface is either on or within the member and has a longitudinal axis.

A shielding coil is located around another cylindrical surface. It lies on or within the member but outside the other cylindrical surface. The two cylindrical surfaces are concentrically aligned to ensure the primary and shielding coils are aligned.

ADVANTAGE - Antiphase relationship between primary and shielding coil currents ensures that acoustic noise generated by **gradient**

coil assembly is reduced. (27pp Dwg.No.4/6)

Abstract (Equivalent): EP 532692 B

For use in **magnetic resonance** imaging, a **gradient coil** assembly comprising: a generally cylindrical member, a primary coil placed about a cylindrical surface on or within said member, said surface having a longitudinal axis, and a shielding coil; characterized in that said shielding coil is placed about a second cylindrical surface on or within said member and outside of said first cylindrical surface, said second cylindrical surface being in substantially concentric alignment with said first mentioned cylindrical surface, to maintain said primary and shielding coils in substantial alignment; and in that said member is unitary and substantially solid throughout and has sufficient stiffness and/or mass to provide anti-phase coupling between said primary and shielding coils to reduce acoustic noise output.

9/3,AB/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008675782
WPI Acc No: 1991-179802/**199125**
XRPX Acc No: N91-137771
Magnetic resonance imaging system for medical diagnosis - improves tomographic image quality by reducing magnetic field body current effects and heat dissipation in superconducting coil system
Patent Assignee: TOSHIBA KK (TOKE)
Inventor: SUGIMOTO H
Number of Countries: 003 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5132618	A	19920721	US 90624553	A	19901210	199232
			EP 90313412	A	19901211	

Priority Applications (No Type Date): JP 89318942 A 19891211
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5132618	A		15	G01R-033/20	

Abstract (Basic): EP 433002 A

The **magnetic resonance** imaging appts. includes a superconducting coil unit, surrounding the patient imaging chamber, for producing a static magnetic field. The coil unit is shielded by one or more heat shields. When obtaining images, a gradient field is superimposed on the static field.

To avoid **eddy current** dissipation in the heat shields, an active gradient field is also applied, having only a low power consumption, by a coil system thermally coupled to the first heat shield.

USE/ADVANTAGE - Improved **magnetic resonance** imaging for medical diagnosis, by reducing magnetic field **eddy current** loss, and hence improving tomographic image quality. (13pp Dwg.No.6/7)

Abstract (Equivalent): EP 433002 B

A **magnetic resonance** imaging apparatus (1000; 2000) comprising a **magnetic resonance** imaging unit (600) having an imaging chamber (3) thereof, to receive a subject (P) under medical examination; a superconducting coil unit (15) contained within an outer vessel (60) which surrounds the imaging chamber (3), and including superconducting coil means (17) for uniformly producing a static magnetic field to be applied to the subject (P), and at least one heat shield member (18) for thermally shielding the superconducting **coil** means (17); **gradient** field **coil** means (50) provided between the outer vessel (60) and imaging chamber (3), for producing a gradient magnetic field so as to be superimposed on the static magnetic field, characterised by active shield **gradient coil** means (52) for producing a gradient shield (HGS), and disposed within the outer vessel (60) in such a manner that the active

shield **gradient coil** (52) is thermally coupled to the heat shield member (18) and magnetically coupled with a leakage field (HGL) from the gradient magnetic field of the **gradient** field **coil** means (50), whereby the leakage field (HGL) is magnetically cancelled by the gradient shield field (HGS) and substantially no **eddy current** is produced in the heat shield member (18)

9/3,AB/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007893847
WPI Acc No: 1989-158959/**198922**
XRPX Acc No: N89-121257
Nuclear **magnetic resonance** imaging system - has screening between superconductive **coils** and enclosed **gradient** field **coils** for suppressing **eddy currents**
Patent Assignee: SIEMENS AG (SIEI)
Inventor: SIEBOLD H
Number of Countries: 004 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 4881035	A	19891114	US 88264775	A	19881028	199004

Priority Applications (No Type Date): DE 3739838 A 19871124
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4881035	A		10		

Abstract (Basic): EP 317853 A
The nuclear **magnetic resonance** imaging system uses superconductive coils (11..13) cooled by a cryogenic medium for providing a homogenous magnetic field and normal coils (8) within the superconductive coils (11..13) providing a magnetic field gradient. A cooled radiation shield (18) of an electrically and thermally conductive material lies between the different coils (8, 11..13).
The screening plate (18) is used to suppress induced **eddy currents** caused by the **gradient coils** (8) in a screening structure (20) associated with the superconductive coils (11..13) and containing a second type of superconductive material. Pref. the screening structure (20) is in the form of a layer or foil applied to the inside surface of a cooled coil former (4) for the superconductive coils (11..13).
ADVANTAGE - Prevents heating of cooled superconductive **coils** by **gradient** field **coils**.
Abstract (Equivalent): EP 317853 B
Magnetic device of an installation for nuclear spin tomography having superconducting coils which are cooled by a cryogenic medium for the purpose of generating a homogeneous magnetic background field, having normal-conducting coils within the interior space bounded by the background field coils for the formation of magnetic field gradients and also having at least one cooled radiation shield made of electrically and thermally conducting material which is arranged between the normal-conducting **gradient coils** and the superconducting background field coils, characterised in that there is arranged on the side of the background field coils (11 to 13) which faces the interior space (6) a tubular screening structure (20, 21, 29, 31, 35, 42) which at least contains superconducting material of second kind and is thermally coupled to the cryogenic medium of the background

field coils and in that the radiation shield (18, 18a, 18b) is developed for the suppression of **eddy currents** induced therein at least by the **gradient coils** (8). (13p

9/3,AB/7 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007471330
WPI Acc No: 1988-105264/**198815**
XRPX Acc No: N88-079809
NMR imaging using active shield to isolate main magnet - using 3 orthogonal **gradient coils** with 3 shield components driven by currents opposite to **gradient coils**
Patent Assignee: MASSACHUSETTS INST TECHNOLOGY (MASI)
Inventor: PILLSBURY R D; PUNCHARD F B
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4733189	A	19880322	US 86870031	A	19860603	198815	B

Priority Applications (No Type Date): US 86870031 A 19860603
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4733189	A		11		

Abstract (Basic): US 4733189 A

The **MRI** system has an active shield with pulsed secondary coils isolating the main magnet. Three pulsed **gradient coils** (defining the X, Y, and Z axes) are isolated from the cryostat and main magnet by a secondary set of three corresponding shield components that are driven by currents opposite to the **gradient coils**. The distribution of the shield windings and the magnitude of the currents in them are adjusted to produce a magnetic field outside the shield equal to but opposite in sign from the field produced by the pulsed **gradient coils**.

Therefore the fields are cancelled outside the pair. The placement of the gradient and shield windings is made so as to reduce or zero unwanted pulsed **gradient coil** field harmonics. For the case of the solenoidal Z pulsed **gradient coil** set and saddle-shaped X and Y pulsed **gradient coil** sets. Specified active shield configurations are used.

USE/ADVANTAGE - By eliminating induced **eddy currents**, resolution of images is improved and imaging time is reduced. Suited to superconducting systems.

15/05/2002 10/023,163

15may02 12:10:58 User267149 Session D84.2

SYSTEM:OS - DIALOG OneSearch
File 350:Derwent WPIX 1963-2001/UD,UM &UP=200230
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*File 350: Please see HELP NEWS 350 for details about U.S. provisional applications. Also more updates in 2002.
File 347:JAPIO Oct/1976-2001/Dec(Updated 020503)
(c) 2002 JPO & JAPIO
*File 347: JAPIO data problems with year 2000 records are now fixed. Alerts have been run. See HELP NEWS 347 for details.

Set

Set	Items	Description
S1	12	PN=CN 1248896 + PN=CN 1252977 + PN=DE 19709978 + PN=DE 372-3776 + PN=DE 3877995 + PN=DE 69129687 + PN=DE 69602145 + PN=DE 69610044 + PN=DE 69700319 + PN=EP 1004889 + PN=EP 284439 + PN=EP 479514 + PN=EP 532692 + PN=EP 715181
S2	16	PN=EP 752596 + PN=EP 764853 + PN=EP 801314 + PN=EP 913699 + PN=EP 965305 + PN=EP 984461 + PN=GB 2215522 + PN=GB 2295672 + PN=GB 2319844 + PN=JP 10070027 + PN=JP 11221201 + PN=JP 2000-083925 + PN=JP 2000157510 + PN=JP 2087505
S3	27	PN=JP 2184002 + PN=JP 3014319 + PN=JP 3073933 + PN=JP 3073-934 + PN=JP 3143371 + PN=JP 4138131 + PN=JP 4138132 + PN=JP 5-251231 + PN=JP 63025907 + PN=JP 63115305 + PN=JP 63241905 + PN=JP 8224219 + PN=JP 9024037 + PN=JP 9075324
S4	15	PN=JP 9117431 + PN=JP 9117432 + PN=JP 9238923 + PN=JP 9283-327 + PN=KR 2000017646 + PN=KR 2000075747 + PN=SG 43224 + PN=US 2001005165 + PN=US 4818966 + PN=US 4827235 + PN=US 4870380 + PN=US 5124651 + PN=US 5194810 + PN=US 5243286
S5	13	PN=US 5283544 + PN=US 5414399 + PN=US 5675256 + PN=US 5701-112 + PN=US 5774034 + PN=US 5825187 + PN=US 5830142 + PN=US 5-977771 + PN=US 6111410 + PN=US 6150818 + PN=US 6259252 + PN=US 6275128 + PN=WO 9119209 + PN=WO 9933397
S6	47	S1:S5
S7	37	S6 AND (MRI OR MAGNETIC()RESONAN???? OR MRA OR NMR OR MAGNETORESONANCE OR PMR OR PROTON()MAGNETIC()RESONAN???? OR MR()IMAG???)
S8	0	S7 AND (THREE OR MULTIPLE OR MULTI OR SEVERAL)(3N)GRADIENT? ?(3N)COIL? ?
S9	12	S7 AND GRADIENT? ?(3N)COIL? ?
S10	6	S9 AND EDDY(3N)CURRENT? ?
S11	0	S9 AND_CONDUCT?????(3N)ELEMENT? ?
S13	2	S9 AND ((STATIC OR STEADY()STATE)(3N)MAGNETIC(3N)FIELD? ?)
S14	1	S13 NOT S10
S15	1	S9 AND HOMOGEN??????
S16	1	S15 NOT S14
S17	0	S9 AND (CONTROL?????(3N)CURRENT? ?(3N)PULS??)
S18	4	S9 AND FERROMAGNET???
S19	2	S18 NOT S10

16/05/2002 10/023,163

10/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011515635
WPI Acc No: 1997-492121/**199746**
XRPX Acc No: N97-409611
MRI magnet assembly with opposite permanent magnets. - creates space of uniform biased magnetic field with segmented cancellation magnetic plate on **gradient coil**
Patent Assignee: SHINETSU CHEM CO LTD (SHIE); SHINETSU CHEM IND CO LTD (SHIE)
Inventor: HIGUCHI D; MIYATA K; OHASHI K; YONEDA Y
Number of Countries: 005 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5825187	A	19981020	US 97843053	A	19970411	199849

Priority Applications (No Type Date): JP 9691049 A 19960412
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5825187	A			G01V-003/00	

Abstract (Basic): EP 801314 A
The assembly consists of a shimmed pole piece (2), a **gradient coil** (4) and a cancellation magnetic plate (5) for the lower half of the magnetic circuit. The upper half of the assembly is symmetrical with the lower half. The shimmed pole piece and the **gradient coil** are of the conventional type.
The cancellation magnetic plate is preferably annular made up by arranging a plurality, e.g sixteen, segments (51 to 516) in a manner of something like a patchwork on the surface of the **gradient coil** facing the air gap formed by the opposite permanent magnets. Each of the segments is electrically insulated from the adjacent segments to avoid **eddy currents**.
USE/ADVANTAGE - Medical. Decreases the residual magnetism induced in the shimmed pole piece by the **gradient coil**.

10/3,AB/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011089623
WPI Acc No: 1997-067548/**199707**
XRAM Acc No: C97-022224
XRPX Acc No: N97-055546
Magnetic resonance appts. avoiding pole piece local field distortion - comprises iron-polyepoxy material not supporting **eddy currents** and controlled coil currents eliminating remanent magnetism, for medical use
Patent Assignee: BAE SYSTEMS ELECTRONICS LTD (BAES-N); GEC-MARCONI LTD (MAON); PICKER INT INC (PXRM)
Inventor: YOUNG I R

Number of Countries: 005 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5675256	A	19971007	US 96674504	A	19960702	199746

Priority Applications (No Type Date): GB 9513544 A 19950704
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5675256	A		9	G01V-003/00	

Abstract (Basic): EP 752596 A

Magnetic resonance appts. comprises:

(a) a magnet system incorporating two pole pieces (1) with opposed surfaces defining a gap for placing a body for examination, producing a static magnetic field in the gap defining an equilibrium axis of magnetic alignment in the body; and

(b) a **gradient coil** arrangement (9) for superimposing gradient(s) on the magnetic field in the gap; where:

(i) at least the parts of the pole pieces adjacent the surfaces are of magnetic material which does not support **eddy currents**, and

(ii) the **gradient coil** energising currents are controlled to avoid significant remanent magnetism in the magnetic material when the **gradient coils** are not being supplied with energising current.

Also claimed is a method of **magnetic resonance** body examination.

USE - Partic. for medical use.

ADVANTAGE - Prevents the field in the pole pieces from becoming locally distorted with resultant deterioration in field homogeneity in the gap and body.

10/3,AB/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010284022
WPI Acc No: 1995-185281/**199524**
XRPX Acc No: N95-145066

Magnetic Resonance Imaging superconducting magnet having open access frame with spaced parallel end plates - has **gradient coils** mounted to upper and lower end plates, cylindrical rose shim attached to each end plate and layer of non ferromagnetic conducting material formed within rose shim

Patent Assignee: APPLIED SUPERCONETICS INC (SUPE-N)
Inventor: BRENEMAN B C; HSU Y L; SARWINSKI R E
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5414399	A	19950509	US 91812080	A	19911219	199524	B

Priority Applications (No Type Date): US 91812080 A 19911219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5414399	A		8	H01F-007/20	

Abstract (Basic): US 5414399 A

The **MRI** superconducting magnet has an open access frame with spaced parallel end plates, a superconducting coil assembly associated with each end plate and **gradient coils** associated with each end plate includes an apparatus for minimizing hysteresis. Hysteresis is minimised by a layer of non ferromagnetic conducting material interposed between the **gradient coils** and end plates.

The interposed layer carries **eddy currents** induced by time varying magnetic fields produced by the **gradient coils**, thereby minimizing AC **eddy current** hysteresis from the end plates. The layer preferably has a thickness of at least one skin depth at the frequency associated with the time varying magnetic field. In another embodiment, each end plate has a number of slits formed therein for eliminating **eddy currents** in the end plates.

USE/ADVANTAGE - Medical. patient diagnosis. Strong magnetic field and good temporal stability. Reduced magnetic hysteresis. Magnet is accessible for additional medical equipment such as radiology equipment.

16/05/2002 10/023,163

10/3,AB/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009106632
WPI Acc No: 1992-234063/**199228**
XRPX Acc No: N92-178169
Nuclear **magnetic resonance** scanners with composite pole facings - has set of ferromagnetic elements in side-by-side relation in each of polar regions to limit **eddy current** generation when windings are energised
Patent Assignee: FONAR CORP (FONA-N)
Inventor: DANBY G T; HSIEH H; JACKSON J W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5124651	A	19920623	US 90602494	A	19901024	199228	B

Priority Applications (No Type Date): US 90602494 A 19901024
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5124651	A		19	G01R-033/20	

Abstract (Basic): US 5124651 A

The medical **NMR** scanner has a primary field magnet assembly, The scanner includes a ferromagnetic frame defining a patient receiving space adapted to receive a human body. It also includes a pair of opposed polar regions aligned on a polar axis. The polar regions are disposed on opposite sides of the patient receiving space. Structure including either electrical windings or a permanent magnet is provided in each of the polar regions for producing a magnetic field within the patient receiving space.

Windings positioned in proximity to each of the polar regions are provided for producing gradients in the magnetic field, when energised. A set of ferromagnetic elements positioned in side-by- side relation to one another in each of the polar regions is provided for limiting **eddy current** generation in the polar regions when the **gradient** producing auxiliary **coils** are energised. Each of the ferromagnetic elements has its shortest dimension oriented generally perpendicular to the polar axis. The ferromagnetic elements comprise rods which are positioned generally parallel to one another and to the polar axis.

10/3,AB/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008988977
WPI Acc No: 1992-116245/**199215**
XRPX Acc No: N92-086929
Magnetic field generator for medical **MRI** appts. - has pair of magnetic poles with gap between, formed by laminating and integrating several non-oriented silicon steel sheets
Patent Assignee: SUMITOMO SPECIAL METALS CO LTD (SUMS)
Inventor: AOKI M; SAKURAI H
Number of Countries: 008 Number of Patents: 011
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5283544	A	19940201	US 91766520	A	19910927	199406

Priority Applications (No Type Date): JP 90261418 A 19900929; JP 90261417 A 19900929; JP 96223058 A 19900929; JP 96223059 A 19900929
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5283544	A		14	H01F-001/00	

Abstract (Basic): EP 479514 A

The magnetic field generator includes a pair of opposed magnetic poles with a gap between them. A magnetic field is generated in the gap. The poles are formed by lamination and integration of multiple non-oriented silicon steel sheets. Each magnetic pole includes multiple block shaped magnetic pole members.

These are stacked in a direction that extends towards opposing magnetic poles to form the laminated structure of the pole.

ADVANTAGE - Reduces **eddy currents** caused by **gradient** field **coils**, reduces residual magnetisation caused by GC pulses.

10/3,AB/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008880364
WPI Acc No: 1992-007635/**199201**
Related WPI Acc No: 1992-024563
XRPX Acc No: N92-005830
Nuclear **magnetic resonance** imaging **gradient coil** assembly - uses cylindrical component with two concentrically aligned surfaces that locate primary and shielding coils
Patent Assignee: ADVANCED NMR SYSTEMS INC (ADNM-N); ADV NMR SYST INC (ADNM-N)
Inventor: MARTIN C; RZEDZIAN R
Number of Countries: 016 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5243286	A	19930907	US 90534156	A	19900606	199337
			US 90546503	A	19900629	

Priority Applications (No Type Date): US 90546503 A 19900629; US 90534156 A 19900606; US 90534142 A 19900606; US 90545888 A 19900629
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5243286	A		7	G01V-003/00	CIP of application US 90534156

Abstract (Basic): WO 9119209 A
The assembly includes a cylindrical unitary member. A primary coil is located around the cylindrical surface. The surface is either on or within the member and has a longitudinal axis.
A shielding coil is located around another cylindrical surface. It lies on or within the member but outside the other cylindrical surface. The two cylindrical surfaces are concentrically aligned to ensure the primary and shielding coils are aligned.
ADVANTAGE - Antiphase relationship between primary and shielding coil currents ensures that acoustic noise generated by **gradient coil** assembly is reduced. (27pp Dwg.No.4/6)
Abstract (Equivalent): EP 532692 B
For use in **magnetic resonance** imaging, a **gradient coil** assembly comprising: a generally cylindrical member, a primary coil placed about a cylindrical surface on or within said member, said surface having a longitudinal axis, and a shielding coil; characterized in that said shielding coil is placed about a second cylindrical surface on or within said member and outside of said first cylindrical surface, said second cylindrical surface being in substantially concentric alignment with said first mentioned cylindrical surface, to maintain said primary and shielding coils in substantial alignment; and in that said member is unitary and substantially solid throughout and has sufficient stiffness and/or mass to provide anti-phase coupling between said primary and shielding coils to reduce acoustic noise output.

10/3,AB/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008880364
WPI Acc No: 1992-007635/**199201**
Related WPI Acc No: 1992-024563
XRPX Acc No: N92-005830
Nuclear **magnetic resonance** imaging **gradient coil** assembly - uses cylindrical component with two concentrically aligned surfaces that locate primary and shielding coils
Patent Assignee: ADVANCED NMR SYSTEMS INC (ADNM-N); ADV NMR SYST INC (ADNM-N)
Inventor: MARTIN C; RZEDZIAN R
Number of Countries: 016 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5243286	A	19930907	US 90534156	A	19900606	199337
			US 90546503	A	19900629	

Priority Applications (No Type Date): US 90546503 A 19900629; US 90534156 A 19900606; US 90534142 A 19900606; US 90545888 A 19900629
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5243286	A		7	G01V-003/00	CIP of application US 90534156

Abstract (Basic): WO 9119209 A
The assembly includes a cylindrical unitary member. A primary coil is located around the cylindrical surface. The surface is either on or within the member and has a longitudinal axis.
A shielding coil is located around another cylindrical surface. It lies on or within the member but outside the other cylindrical surface. The two cylindrical surfaces are concentrically aligned to ensure the primary and shielding coils are aligned.
ADVANTAGE - Antiphase relationship between primary and shielding coil currents ensures that acoustic noise generated by **gradient coil** assembly is reduced. (27pp Dwg.No.4/6)
Abstract (Equivalent): EP 532692 B
For use in **magnetic resonance** imaging, a **gradient coil** assembly comprising: a generally cylindrical member, a primary coil placed about a cylindrical surface on or within said member, said surface having a longitudinal axis, and a shielding coil; characterized in that said shielding coil is placed about a second cylindrical surface on or within said member and outside of said first cylindrical surface, said second cylindrical surface being in substantially concentric alignment with said first mentioned cylindrical surface, to maintain said primary and shielding coils in substantial alignment; and in that said member is unitary and substantially solid throughout and has sufficient stiffness and/or mass to provide anti-phase coupling between said primary and shielding coils to reduce acoustic noise output.

16/05/2002 10/023,163

14/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011204015
WPI Acc No: 1997-181939/**199717**
XRPX Acc No: N97-149652
Magnet assembly for **magnetic resonance** imaging instrument - has magnetically soft ferromagnetic material which has coercive force not exceeding 100 oersteds
Patent Assignee: SHINETSU CHEM CO LTD (SHIE); SHINETSU CHEM IND CO LTD (SHIE)
Inventor: HIGUCHI D; MIYATA K; OHASHI K; YONEDA Y
Number of Countries: 006 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5774034	A	19980630	US 96706349	A	19960830	199833

Priority Applications (No Type Date): JP 95239530 A 19950919
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5774034	A			G01V-003/00	

Abstract (Basic): EP 764853 A

The magnet assembly includes pair of permanent magnets oppositely disposed to face each other having **magnetic** gap space with **static magnetic field** between them, pair of pole pieces each mounted on one of the permanent magnets facing the magnet gap space and pair of magnetic modulating **coils** for generating **gradient magnetic field** relative to the **static magnetic field** generated by the permanent magnets.

A pair of magnetic field compensation members having thickness in the range of 0.5 mm to 0.5 mm made from magnetically soft ferromagnetic material is mounted on one of the magnetic modulating devices facing the magnetic gap space, so that the residual magnetisation in the compensation member generates a magnetic field which is compensatory for the magnetic field due to the residual magnetisation in the pole pieces.

ADVANTAGE - Cancels adverse influences caused by residual magnetisation of pole pieces by gradient magnetic field in **gradient** field **coils**.

16/3,AB/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011089623
WPI Acc No: 1997-067548/**199707**
XRAM Acc No: C97-022224
XRPX Acc No: N97-055546

Magnetic resonance appts. avoiding pole piece local field distortion - comprises iron-polyepoxy material not supporting eddy currents and controlled coil currents eliminating remanent magnetism, for medical use

Patent Assignee: BAE SYSTEMS ELECTRONICS LTD (BAES-N); GEC-MARCONI LTD (MAON); PICKER INT INC (PXRM)
Inventor: YOUNG I R

Number of Countries: 005 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5675256	A	19971007	US 96674504	A	19960702	199746

Priority Applications (No Type Date): GB 9513544 A 19950704
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5675256	A		9	G01V-003/00	

Abstract (Basic): EP 752596 A

Magnetic resonance appts. comprises:

(a) a magnet system incorporating two pole pieces (1) with opposed surfaces defining a gap for placing a body for examination, producing a static magnetic field in the gap defining an equilibrium axis of magnetic alignment in the body; and

(b) a **gradient coil** arrangement (9) for superimposing gradient(s) on the magnetic field in the gap; where:

(i) at least the parts of the pole pieces adjacent the surfaces are of magnetic material which does not support eddy currents, and

(ii) the **gradient coil** energising currents are controlled to avoid significant remanent magnetism in the magnetic material when the **gradient coils** are not being supplied with energising current.

Also claimed is a method of **magnetic resonance** body examination.

USE - Partic. for medical use.

ADVANTAGE - Prevents the field in the pole pieces from becoming locally distorted with resultant deterioration in field **homogeneity** in the gap and body.

19/3,AB/2 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

05460524
MAGNETIC RESONANCE IMAGING DEVICE

PUB. NO.: 09-075324 [**JP 9075324** A]
PUBLISHED: March 25, 1997 (19970325)
INVENTOR(s): YONEDA SUKEHITO
MIYATA KOJI
OHASHI TAKESHI
HIGUCHI MASARU
APPLICANT(s): SHIN ETSU CHEM CO LTD [000206] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 07-239530 [JP 95239530]
FILED: September 19, 1995 (19950919)

ABSTRACT

PROBLEM TO BE SOLVED: To reduce the influence of residual magnetization generated at a magnetic pole piece upon an image by arranging a **ferromagnetic** substance on the void side of a means for generating a gradient magnetic field.

SOLUTION: A **ferromagnetic** substance 7 such as soft iron is arranged on the void side of a **gradient** magnetic field **coil** 1. When the **gradient** magnetic field is impressed, the residual magnetization opposite to the residual magnetization generated at a magnetic pole piece 2 is generated since the **ferromagnetic** substance 7 is positioned, facing the magnetic pole element 2 with the **gradient** magnetic field **coil** 1 in-between. Then, the residual magnetization generated at the **ferromagnetic** substance 7, which is provided on the void side of the **gradient** magnetic field **coil** 1, and made opposite to that of the magnetic pole piece 2 is used for canceling the residual magnetization of the magnetic pole piece. Since the magnetic pole piece 2 is apart when it is observed from a uniform magnetic field space but the **ferromagnetic** substance 7 provided on the void side of the **gradient** magnetic field **coil** 1 is near rather than it, the residual magnetization generated at the **ferromagnetic** substance 7 provided on the void side of the **gradient** magnetic field **coil** 1 is smaller than the residual magnetization generated at the magnetic pole piece 2 so that the residual magnetization can be canceled.